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## CONTRIBUTIONS TO THE ICHTHYOLOGY OF THE TROPICAL PACIFIC.

BY HENRY W. FOWLER.

## I. THE SANDWICH ISLANDS.

Among the more important collections of fishes presented to the Academy of Natural Sciences of Philadelphia during the earlier days of its existence, was one made by the celebrated naturalist and traveller, Dr. John K. Townsend, in the tropical Pacific.

In the year 1834 it seems that an expedition was formed under the auspices of a Captain Wyeth, who intended to travel over the United States to establish trading posts along the Pacific coast. Dr. Townsend joined the expedition at the suggestion of Mr. Thomas Nuttall, the distinguished botanist, who was also a member of the party. After proceeding to Fort Vancouver, they embarked for the Sandwich Islands, arriving in Honolulu, January 5th, 1835, and after visiting the various islands returned to the Columbia river in April. On the first of October, 1835, Nuttall left Townsend, who remained in the West till November, 1836, when he again left the Columbia for the Sandwich Islands, making Oahu in December, and after making a second tour of the islands, he proceeded to Tahiti.

For detailed information concerning the route, reference should be made to the account which he published in 1839, entitled "Narrative of a Journey across the Rocky Mountains to the Columbia River, and a visit to the Sandwich Islands, Chili, etc."

Subsequently Dr. William H. Jones, of the United States Navy, was enabled to make collections in various branches of zoölogy while in the tropical Pacific, among which was one of fishes, which has found its way into the Academy.

Dr. Benjamin Sharp, who visited the Sandwich Islands in 1893, made collections, mostly of invertebrates, among which was a small collection of fishes which he purchased in the markets of Honolulu during October or November.

All the specimens are alcoholic, except a number in the Townsend and Nuttall collections which are dry preparations.

## LEPTOCEPHALIDÆ.

1. *Leptocephalus* sp.?

No. 1,042. Thomas Nuttall. A larval specimen.

## OPHICHTHYIDÆ

2. *Leiuranus semicinctus* (Lay and Bennett).

*Ophisurus semicinctus* Lay and Bennett, Zool. Capt. Beechey's Voyage, 1839, p. 66, Pl. XX, fig. 4.

Nos. 16,477 and 16,478.

3. *Myrichthys magnificus* (Abbott). Plate XVIII, fig. 3.

*Pisöodonophis magnifica* Abbott, Proc. Acad. Nat. Sci. Phila., 1860, p. 476.

Nos. 1,013 and 1,014. Dr. J. K. Townsend.

Types of Abbott's *Pisöodonophis magnifica*.

## MURÆNIDÆ.

4. *Lycodontis eurosta* (Abbott). Plate XVIII, fig. 4.

*Thyrsoidea eurosta* Abbott, Proc. Acad. Nat. Sci. Phila., 1860, p. 478.

No. 984. Dr. J. K. Townsend.

Type of Abbott's *Thyrsoidea eurosta*.

5. *Lycodontis acutirostris* (Abbott). Plate XVIII, fig. 5.

*Muræna acutirostris* Abbott, Proc. Acad. Nat. Sci. Phila., 1860, p. 476.

No. 998. Dr. J. K. Townsend.

Type of *Muræna acutirostris* Abbott.

6. *Lycodontis kaupii* (Abbott). Plate XVIII, fig. 6.

*Thyrsoidea Kaupii* Abbott, Proc. Acad. Nat. Sci. Phila., 1860, p. 477.

No. 916. Dr. J. K. Townsend.

Type of *Thyrsoidea Kaupii* Abbott.

7. *Lycodontis pseudothyrsoides* (Bleeker).

*Muræna pseudothyrsoides* Bleeker, Natuurk. Tijdsch. voor Nederl. Indie, Jaarg. III, 1852, p. 778.

No. 996. Dr. J. K. Townsend.

No. 16,476. Dr. W. H. Jones.

8. *Lycodontis parvibranchialis* sp. nov. Plate XVIII, fig. 1.

No. 16,483. Type.

The form of the body is elongate and compressed, and resembles that of the preceding species. Mouth closing, but when closed the lips do not conceal the sharp teeth completely, as some of these are always visible laterally; lateral teeth of the upper jaw in 2 rows till posterior to the eyes at least, those in the inner row somewhat

the larger and occasionally a canine-like form is assumed; about 9 large, fang-like teeth in the anterior portion of the upper jaw, which has but 1 row of bordering teeth; the teeth in the lower jaw in 2 rows which are close together and rather irregular; this is the case in the upper jaw directly below the eye, and there are also enlarged fang-like teeth in the anterior part of the mandible like those above, vomerine teeth in a single series, the median being slightly larger than the others. The neck has the swollen appearance of most of the Morays, and is thicker than the body. The branchial apertures, which are very small, inconspicuous, and which might easily be overlooked, have the cleft of the mouth contained in the space between themselves and the tip of the snout about 3 times. The eyes are rather large, contained in the snout more than once their diameter, situated laterally, directly above the jaws, and nearly midway between the tip of the snout and the corners of the mouth. The anterior nostrils are placed in fleshy tubes, the posterior pair are situated in the antero-inter-orbital space, and midway between the eyes and the tip of the snout are also a pair of nostril-like pores. The depth of the head in the ocular region is greater than its width in the same region, its general shape is moderately attenuated and compressed laterally. The interorbital space is about equal to the diameter of the eye and is nearly level. The D., whose origin is at a point anterior to the branchial aperture, though not median in position in the space between the latter point and the corner of the mouth, is of moderate height and, like the A., is continuous with the caudal. The P. are absent. The vent is situated about an eye-diameter in advance of the origin of the A. Lateral line absent. The general color of the body is a dark, rich brown, variegated with about 4 rows of longitudinal whitish spots, all of which are not larger than the pupil of the eye. The space intervening between the whitish spots is marked with blackish blotches of a similar size as the white ones, but not so sharply defined.

One small specimen.

9. *Echidna zonata* sp. nov. Plate XVIII, fig. 2.

No. 16,484. Type.

Form of the body elongate, compressed, especially the caudal region. The branchial aperture about equal to the eye, and with the cleft of the mouth contained in the space between the foremost

point and the tip of the snout 3 times. The snout is bluntly obtuse, though slightly compressed laterally, and it projects beyond the lower jaw. Eyes placed directly above the mouth, laterally, and slightly posterior to its centre, so that they are contained in the snout at least  $1\frac{1}{2}$  times. Anterior nares in tubes near the tip of the snout, posterior nares situated superior to the eye and in the interorbital space, and with the nostril-like pores as in the preceding species. The eyes are covered with thin skin, and are not equal to the interorbital space which is convex. Teeth obtuse, molar like, in 2 series laterally in the lower jaw; anterior teeth in both jaws enlarged, vomerine teeth in a single series. Mouth capable of being completely closed, so that no teeth are then visible. Neck not much greater in depth than the rest of the body. There are no P. Origin of the D. midway between the tip of the snout and the branchial aperture, the fin itself of moderate height, and like the A., confluent with the caudal. Anus midway in the ventral region of the body and directly in front of the origin of the A. The general color of the body is a very pale brownish-white, pure white on both jaws anterior to the eyes and the extremity of the caudal. Upon the light ground color of the body are large, rich umber blotches, which are clearly and evenly defined and which extend upon the D. and A. fins, but do not cross the abdominal region. Length about 5 inches.

10. *Echidna polyzona* (Richardson).

*Muraena polyzona* Richardson, Zool. Voy. Sulphur; Ichth., I, 1844, p. 112, Pl. LV, figs. 11 and 12.

No. 16,485.

Head anterior to the eyes, white. On the anterior half of the body the white rings which encircle the trunk widen considerably, and all the region anterior to the vent is whitish; there are 27 white rings, if the snout and tip of the caudal are counted. The tail is a little longer than the body.

ELOPIDÆ.

11. *Elops saurus* Linnaeus.

*Elops saurus* Linnaeus, Syst. Nat., Ed. XII, 1766, p. 518.

No. 1,181. Dr. W. H. Jones.

## ENGRAULIDIDÆ.

12. *Stolephorus purpureus* sp. nov. Plate XIX, fig. 1.

Nos. 23,329 and 23,330. Types. Dr. W. H. Jones.

This species is close to the *Stolephorus ischanus* of Jordan and Gilbert.

Form of the body elongate and compressed, the greatest depth of the body contained in its length without the caudal nearly 6 times and the head in the same  $3\frac{1}{2}$  times. Head laterally compressed. Eyes lateral, anterior to the centre of the head, in which they are contained  $3\frac{1}{2}$  times, and about equal to the snout. Mouth large, the maxillaries with their distal portion produced backwards beyond the posterior margin of the eye equal to an eye diameter and with their lower edges with minute teeth. Teeth in the lower jaw. Gill-rakers numerous. The D. is inserted a little behind the base of the V., and nearer the tip of the snout than the tip of the caudal or as in *Stolephorus ischanus* midway between the anterior margin of the eye and the base of the caudal. Radii of D. 11 and 15; of A. 13? and 16. The origin of the A. is at a point posterior to the base of the last D. ray. The P. are short but reach beyond the centre of the space between their bases and the bases of the V. Scales apparently not firm or closely adhering to the body, very few remaining on these examples. A broad silvery lateral bar from the upper part of the head passes to the caudal and widens posteriorly as in *Stolephorus commersonianus* Lacépède. Color of the head silvery and the silvery lateral band and remaining scales shot with delicate purple. The caudal is faintly spotted with brownish dots. Total length of both specimens about  $2\frac{3}{8}$  inches.

## SYNODONTIDÆ.

13. *Synodus sharpi* sp. nov. Plate XIX, fig. 2.

Nos. 16,084 to 16,086. Types. Dr. W. H. Jones.

This species is near *Synodus evermanni* of Jordan and Bollman. Form of the body elongate, the depth contained in the total length without the caudal  $6\frac{2}{3}$  to 7 times, and the head in the same about 4 times. Head blunt, strongly compressed above and with the interorbital space concave and equal to the diameter of the eye. Eyes superior and anterior in the head in which they are contained  $4\frac{1}{2}$  to 5 times. The nares are placed about midway between the tip of the snout and the anterior margin of the eye,

the snout itself greater than the eye. Jaws equal, the teeth large and the space between the tip of the snout and the posterior extremity of the maxillary about  $\frac{2}{3}$  the length of the head. The P. short, rounded and not equal to  $\frac{1}{2}$  the length of the head. The V. large, radii 10, inserted anterior to the tip of the P., the innermost rays the longest, and when depressed reaching beyond the base of the last D. ray. Origin of the D. more posterior to the tips of the P. than the origins of the V. are anterior, the anterior rays of the fin reaching the tips of the posterior when depressed, the radii 10, and the origin also nearer the adipose fin than the tip of the snout. The origin of the A. nearer the origin of the V. than the tip of the caudal. Radii of A. 9, without the first rudiment. Base of the V. with a long flap. Caudal forked and with acute points. Lateral line distinct, straight, but without any distinct keel. Scales about 52. The general color is brownish, darker above, and spotted or indistinctly marbled with darker brown. Along the sides are 9 large, well-defined dark brown blotches which are disposed at regular intervals. All the fins and also the mandible are barred with brown. Total length of the specimens  $3\frac{3}{16}$ ,  $2\frac{1}{2}$  and  $1\frac{5}{16}$  inches.

Named for Dr. Benjamin Sharp.

14. *Saurida tumbil* (Bloch).

*Salmo tumbil* Bloch, Ichthyologie, Vol. 4. pt. 11, 1797, p. 100, Pl. 439.

Nos. 7,956 and 7,957. Dr. J. K. Townsend.

MYCTOPHIDÆ.

15. *Rhinoscopelus coruscans* (Richardson).

*Myctophum coruscans* Richardson, Voyage of the Erebus and Terror; Ichth., 1844-48, p. 40, Pl. 27, figs. 1, 2, 3 and 4.

Nos. 7,972 to 7,975. Near the Sandwich Islands. Dr. W. H. Jones.

16. *Myctophum* sp.?

No. 14,897. Lat.  $21^{\circ}$  N., Long.  $151^{\circ}$  W. Dr. W. H. Jones.

HEMIRAMPHIDÆ.

17. *Hyporhamphus* sp.?

Nos. 7,507 and 23,338. Near the Sandwich Islands. Dr. W. H. Jones.

**18. Hemiramphus depauperatus** Lay and Bennett. Plate XIX, fig. 3.

*Hemiramphus depauperatus* Lay and Bennett, Zool. Capt. Beechey's Voyage, 1839, p. 66.

Nos. 7,530 to 7,532. Thomas Nuttall and Dr. J. K. Townsend.

Form of the body elongate, strongly compressed, the greatest depth contained in the total without the beak and caudal  $7\frac{1}{5}$  to  $7\frac{1}{2}$  times, and the head including the beak is contained in the entire length of the fish not 3 times. The greatest depth of the head which is in the occipital region is about  $\frac{1}{2}$  its length without the beak, and the latter equals about  $\frac{3}{4}$  the length of the projecting beak. The eye is situated in the upper anterior part of the head and is contained in the space between its anterior margin and the tip of the upper jaw  $1\frac{1}{2}$  times, in the length of the head from the latter point to the margin of the opercles 4 times, in the greatest depth of the head about twice, and once in the flat inter-orbital space. In all these measurements of the eye the eye is measured horizontally, as its shape is that of a somewhat contracted ellipse, and the pupil is also the same shape, and larger than the nasal aperture, which is placed anterior to the eye and superior in position. The internasal region is equal to the vertical diameter of the eye. The rostral flap is produced considerably anterior to the tip of the upper jaw. Gill-rakers numerous, strong, the longest about equal to the pupil of the eye, but the last are not as large as the others. Branchiostegal radii about 12, and in all the examples those on the left ceratohyal overlap those on the right. Top of the head with pores and somewhat laterally and above the præoperculum rugose tracts are seen. Origin of the P. superior, on a level with the upper margin of the eye, and but little behind the posterior margin of the branchial-aperture, about equal to the head in length (without beak), and much longer than the base of the D., its length contained in the space between its origin and that of the V. twice. Radii of P. I. 10. The origins of the V. nearer the tip of the P. than the base of the caudal and nearer the latter than the branchial-aperture, before the origin of the D. and reaching more than half-way in the space between their own bases and that of the A. Radii of V. 6, rather short and flattened, and the innermost the strongest. Nearly  $\frac{1}{3}$  of the D. is anterior to the origin of the A., whose base is about  $\frac{2}{3}$  the length of that of the D. The radii of the D. differ from the



number given by Lay and Bennett, as there are 14 in all 3 of these examples, and there are also a few small scales at the bases of several of the foremost. As most of the rays of the fins have been more or less damaged, it is not possible to give a comparison of the length of the rays of the D., yet I do not think that the second, if any longer at all than the third, was very much so, and in 2 of the examples the last ray, which is better preserved than some of the others, is longer than the shorter rays of the fin and which immediately precede it. The radii of the A. vary from 12 to 14, the first the shortest, and the second and third the longest. Caudal deeply forked, the lower lobe the longest and the rays strengthened as in many of the other species. The rudimentary caudal rays are flattened and the lower are much larger than the upper. Lateral line present, running inferiorly along the ventral region to the lower rays of the caudal and its course traversing about 60 scales. As so many of the scales have been lost and the specimens have been in alcohol so many years, any traces of the color in life would naturally be supposed to have disappeared, yet there is a bright silvery lustre about the head, and the eyes are yellowish. Total length  $13\frac{3}{4}$  inches, the beak measuring mostly  $2\frac{1}{2}$  inches.

#### EXOCETIDÆ.

19. *Parexocetus mesogaster* (Bloch).

*Exocetus mesogaster* Bloch, Ichthyologie, Vol. 4, pt. 12, 1797, p. 12, Pl. 399.

No. 7,482. Dr. J. K. Townsend.

20. *Exocetus volitans* Linnaeus.

*Exocetus volitans* Linnaeus, Syst. Nat., Ed. X, 1758, p. 316.

No. 7,457. Dr. W. H. Jones.

#### AULOSTOMIDÆ.

21. *Aulostomus chinensis* (Linnaeus).

*Fistularia chinensis* Linnaeus, Syst. Nat., Ed. XII, 1766, p. 515.

No. 9,763. Oahu. Dr. W. H. Jones.

#### MUGILIDÆ.

22. *Mugil kelaartii* Günther.

*Mugil kelaartii* Günther, Cat. Fish, Brit. Mus., III, 1861, p. 429.

Nos. 9,804 and 9,805. Dr. W. H. Jones.

Scales about 33; D. VI, I, 8; A. III, 9; P. extending to the

eleventh scale of the lateral line and to the origin of the D. and shorter than the head; base of the A. not quite as long as the longest D. ray, both fins scaly; 19 scales between the tip of the snout and the origin of the D.; adipose eyelids broad, and the maxillary is entirely hidden; caudal emarginate and scaly; total length 7 to  $7\frac{1}{8}$  inches.

#### SPHYRÆNIDÆ.

23. *Sphyræna commersonii* Cuvier and Valenciennes.

*Sphyræna Commersonii* Cuvier and Valenciennes, Hist. Nat. Poiss., III, 1829, p. 260.

No. 11,459. Dr. W. H. Jones.

#### POLYNEMIDÆ.

24. *Polydactylus pfeifferi* (Bleeker).

*Polydactylus Pfeifferi* Bleeker, Natuurk. Tijdsch. voor Nederl. Indie, Deel IV, (New Series I) 1853, p. 249.

Nos. 11,504 to 11,507. Dr. W. H. Jones.

#### HOLOCENTRIDÆ.

25. *Myripristis murdjan* (Forskål).

*Sciæna murdjan* Forskål, Descript. Animal., 1775, p. 48.

No. 17,122. (Dried skin.) Dr. J. K. Townsend.

No. 22,947. Honolulu. Dr. Benjamin Sharp.

26. *Holocentrus diadema* Lacépède.

*Holocentrus diadema* Lacépède, Hist. Nat. Poiss., III, 1801, Pl. 32, fig. 4; IV, 1801, pp. 372 and 374.

No. 17,125. (Dried skin.) Dr. J. K. Townsend.

27. *Holocentrus diploxiphus* Günther.

*Holocentrum diploxiphus* Günther, Proc. Zool. Soc. London, 1871, p. 660.

Nos. 17,124 and 17,126. (Dried skins.) Dr. J. K. Townsend.

#### CARANGIDÆ.

28. *Trachurops orumenophthalmus* (Bloch).

*Scomber crumenophthalmus* Bloch, Ichthyologie, Vol. 4, pt. 10, 1797, p. 65, Pl. 343.

Nos. 11,280 and 11,281. Dr. W. H. Jones.

29. *Caranx latus* Agassiz.

*Caranx latus* Agassiz, Genera et species Pesci. Brasiliæ, 1829, p. 105, tab. LVIIb., fig. 1.

Nos. 22,948 and 22,949. Honolulu. Dr. Benjamin Sharp.

## EQUULIDÆ.

30. *Equula* sp.?

No. 15,231. Dr. W. H. Jones.

## KUHLIDÆ.

31. *Kuhlia malo* (Cuvier and Valenciennes).

*Dules malo* Cuvier and Valenciennes, Hist. Nat. Poiss., VII, 1831, p. 360.

No. 17,099. (Dried skin.) Dr. J. K. Townsend.

Nos. 22,922 and 22,923. Dr. Benjamin Sharp.

## CHEILODIPTERIDÆ.

32. *Apogon* sp.?

Nos. 13,434 to 13,437. Dr. J. K. Townsend.

## SERRANIDÆ.

33. *Epinephelus fuscoguttatus* (Forskål).

*Perca summara*, var. *fusco-guttata*, Forskål, Descript. Animal, 1775, p. 42.

No. 13,463. Dr. J. K. Townsend.

## LUTIANIDÆ.

34. *Aprion microlepis* (Bleeker).

*Chætopterus microlepis* Bleeker, Versl. Mededeel. Konink. Akad. Wetensch., Tweede Reeks, Derde Deel, 1869, p. 80.

No. 13,290. Dr. J. K. Townsend.

## SPARIDÆ.

35. *Sparosomus unicolor* (Quoy and Gaimard).

*Chrysophrys unicolor* Quoy and Gaimard, Voyage de l'Uranie, Zool., 1824, p. 299.

No. 12,326. Dr. J. K. Townsend.

## CIRRHITIDÆ.

36. *Cirrhitus forsteri* (Bloch and Schneider).

*Grammistes Forsteri* Bloch and Schneider, Syst. Ichth., 1801, p. 191.

No. 12,220. Dr. J. K. Townsend.

No. 17,253. (Dried skin.) Thomas Nuttall.

No. 17,254. (Dried skin.) Dr. J. K. Townsend.

Nos. 22,944 to 22,946. Honolulu. Dr. Benjamin Sharp.

## POMACENTRIDÆ.

37. *Tetradrachmum trimaculatum* (Rüppell).

*Pomacentrus trimaculatus* Rüppell, Atlas zu der Reise im Nördl. Afrika, 1828, p. 39, taf. 8, fig. 3.

Nos. 9,615 to 9,618. Thomas Nuttall.

No. 9,619. Oahu. Dr. W. H. Jones.

38. *Eupomacentrus nigricans* (Lacépède).

*Holocentrus nigricans* Lacépède, Hist. Nat. Poiss., IV, 1801, pp. 332, 367 and 370.

Nos. 9,661 and 9,662. Oahu. Dr. W. H. Jones.

Form of the body short, much compressed, and the greatest depth contained in the total length, without caudal, about  $1\frac{1}{4}$  times. The head is small, contained in the body, without caudal,  $3\frac{1}{2}$  times and in the greatest depth of the body a little over twice. Eye placed superior and anterior to the centre of the head in which it is contained 3 times. The eye is also a little smaller than the interorbital space, which is strongly convex and contained itself  $2\frac{1}{2}$  times in the head. Nostrils placed anterior to the eye to which they are nearer than the tip of the snout, though they are a little below the level of the pupil. The orbitals are broad, though none attain a breadth equal to the diameter of the eye, those situated postero-inferiorly with the lower margin with very distinct denticulations and equal to at least  $\frac{2}{3}$  the breadth of the præorbitals. Lips and jaws naked, without any scales. Mouth small, reaching as far as the anterior margin of the eye. Teeth compressed and in a single band-like series. The præoperculum slopes forward, the posterior margin denticulate and the lower margin smooth, and the angle would be formed anterior to the posterior margin of the eye in the vertical and also a little below the base of the uppermost P. rays. The operculum is furnished superiorly with 2 small spinous processes along the posterior edge. The profile-line of the head from the snout to the origin of the D. is convex, though compressed in the occipital region. The origin of the D. is at a point directly over that of the P. and both are posterior to the posterior opercular margins; radii XIII, 17, the median branched rays produced, much higher than the spinous part of the fin, the base of the posterior ray more posterior in position than the same of the A. and with the result that the tip of the former approaches nearer the tip of the caudal than the latter. Upper part of the

base of the P. nearly level with the mouth, radii 20, not extending so far posteriorly as the V. and about equal to the length of the head. Origin of the V. posterior to the same of the P., radii I, 5, and the first ray with a filament-like point which reaches the anus. Origin of the A. below that of the soft D., radii II, 14, the soft part of the fin similar to the soft D., and the first spine greatly inferior to the second in size. Body covered with scales, except the lips, jaws and the edges of the D., A. and caudal, and also the greater part of the P. and all of the V. The P. without scaly flap, though several of the scales above its base are enlarged, and the scales on the base of the fin itself minute. The V. are furnished with scaly flaps and there is also one between their bases. The scales along the base of the unpaired fins, with the exception of those at the base of the spinous D., which are as large as those on the sides of the body, are all very small and extend over the greater part of the fins. There is a line of demarcation between the bases of these fins showing where the fin-rays articulate with the interneural and interhæmal spines. Caudal deeply emarginate and the upper lobe a little longer than the lower. The lateral line is strongly arched and not extending as far posteriorly as the last A. ray. Scales about 32, tubes 20. The caudal peduncle is rather strong and much compressed, and its depth is more than  $\frac{1}{2}$  the length of the head. In alcohol these specimens are dark brownish with the bases of the soft D. and A., and also the caudal, spotted. The P. shows faint traces of spots or blotches. Entire length about  $4\frac{1}{4}$  inches.

**39. *Abudefduf sordidus* (Forskål).**

*Chatodon sordidus* Forskål, Descript. Animal., 1775, p. 62.

No. 9,606. Dr. J. K. Townsend.

No. 9,613. Oahu. Dr. W. H. Jones.

No. 17,214. (Dried skin.) Dr. J. K. Townsend.

**40. *Abudefduf sexfasciatus* (Lacépède).**

*Labrus sexfasciatus* Lacépède, Hist. Nat. Poiss., III, 1801, pp. 430 and 477, Pl. 19, fig. 2.

Nos. 9,604 and 9,605. Dr. J. K. Townsend.

No. 15,228. Oahu. Dr. W. H. Jones.

**41. *Abudefduf limbatus* (Cuvier and Valenciennes).**

*Glyphisodon limbatus* Cuvier and Valenciennes, Hist. Nat. Poiss., V, 1830, p. 357.

No. 17,215. (Dry skin.) Dr. J. K. Townsend.

The form of the body somewhat ellipsoid, compressed, the snout not conspicuously or abruptly blunt and with the greatest depth of the body contained in its length without the caudal twice. The head is contained in the body without caudal  $3\frac{8}{15}$  times, and the head is about equal to  $\frac{1}{2}$  the greatest depth of the body. The eye is superior and anterior in position, a little over 3 in the head and its diameter greater than the snout. Nostril very near the front margin of the eye and slightly inferior to its centre. Orbitals broad, none equal to the eye, the anterior the deepest and about equal to  $\frac{2}{3}$  the eye and the margin of the præoperculum is distant from the posterior margin of the eye about the same. Mouth small, most likely reaching to the front of the eye when closed. The orbitals are furnished with a single series of scales below the eyes, but they do not reach as far as the anterior margin of the eye. The margin of the præoperculum is inclined forwards and the angle would form below the posterior margin of the eye in the vertical. There are four series of scales on the cheeks. The snout, lips and chin are naked. Teeth long, narrow, in a single series and with the apical portion slightly serrate. Origins of both the V. and P. in advance of the D., the former furnished with a scaly flap and the P. with the scales enlarged above its base. The basal third of the P. covered with minute scales, the radii of the fin about 20, the radii of the V. I, 4, the first soft ray produced (the tip of which is broken) and reaching for about  $\frac{2}{3}$  the distance from its base to the origin of the A., and entirely destitute of scales. The spinous D. much longer than the soft D., but not equal to the latter in height, radii XII, 18, the first spine the shortest, the next longer and all the rest still longer and about equal. The base of the D. is covered with scales, those on the spinous D. larger and entirely covering the basal half of that portion of the fin, while those on the soft D. are rather minute. Origin of the A. below the last D. spine, radii II, 13, the soft part of the fin similar to the soft D. and also covered with minute scales though there are some large ones anteriorly. Caudal peduncle broad and compressed. Last ray of D. not reaching as far posteriorly as the last A. ray. Caudal deeply emarginate, the upper lobe the longest and the basal part covered with minute scales. Lateral line not parallel with the dorsal outline of the back, puncturing 21 scales and stopping considerably short of the terminal branched D. rays in the

vertical. Scales, about 30, in a lateral series to the base of the caudal, and 3 scales between the lateral line and the profile-line of the back at the articulations of the interneural and D. rays. Total length  $4\frac{1}{2}$  inches.

#### LABRIDÆ.

**42. *Anampses cæruleopunctatus*** Rüppell.

*Anampses cæruleopunctatus* Rüppell, Atlas zu der Reise im Nördl. Afrika, 1828, p. 42, taf. 10, fig. 1.

Nos. 9,622 and 9,623. Dr. J. K. Townsend.

**43. *Anampses cuvieri*** Quoy and Gaimard.

*Anampses Cuvier* Quoy and Gaimard, Voyage de l'Uranie, Zool., 1824, p. 276, Pl. 55, fig. 1.

No. 9,624. Dr. J. K. Townsend.

Nos. 17,197, 17,198 and 17,212. (Dried skins.) Dr. J. K. Townsend.

Form of the body oblong, compressed, the greatest depth contained in the total length exclusive of the caudal about  $2\frac{4}{7}$  times and the head in the same, excluding the opercular flap  $3\frac{1}{2}$  times. The head has a rhomboid appearance, due to the produced opercular flap which is not as long as the diameter of the eye. The eye is situated in the upper anterior part of the head in which it is contained, exclusive of the opercular flap, a trifle over 4 times, in the snout about  $1\frac{1}{2}$  times, and in the interorbital space the same. The angle formed by the snout would not be a right one. The upper profile is concave in front of the interorbital space, then straight to the occiput after which it is convex to the origin of the D. The nostrils are placed anterior to the eye and not an eye diameter distant, the anterior a little lower than the posterior pair which are placed about midway in the space between the anterior pair and the anterior margin of the eye. The præorbital greater than the diameter of the eye, and the infraorbitals barely  $\frac{1}{2}$  the diameter of the eye, both are unevenly striated. Mouth protractile, capable of considerable distension, furnished with 4 conspicuous projecting compressed teeth which are turned forwards and provided with a grinding edge; there are two teeth in each jaw, the lower pair are closer together than the upper and fit in between the latter when the jaws are closed. The corners of the closed mouth fall a little posterior to the anterior nostrils in the vertical. The lips are well developed and fleshy. The præoper-

culum, operculum, suboperculum and the interoperculum striated. The entire head is naked, the snout, interorbital and cranial regions have the skin finely roughened, the cheeks smooth. The angle of the præoperculum, which would be an obtuse one, falls below the posterior margin of the eye. Branchial aperture moderate, gill-membranes united to the isthmus, gill-slits small and the gill-rakers also small and short. Pseudobranchiæ developed. Origin of the D. in advance of that of the P., which is in advance of the origin of the V., about over the posterior margin of the operculum (the flap excluded). The D. spines are firm, the first the shortest, the next larger, and the third longer and together with the others about equal, though none are as high as the highest soft rays. The P. shorter than the head, though longer than the V., which are attenuated, having their first rays reaching the anus, and they have the basal portion of the innermost ray connected with the body by a membrane. The origin of the A. falls below the first ray of the soft D., and also the tip of the P. which reaches that far posteriorly. The A. spines are much shorter than any of the rays of the fin, and they are graduated from the first, which is the smallest, to the third. The soft A. rays of nearly equal height, though the terminal one is the shortest and not situated as far posteriorly as the last soft D. ray, yet both reach the base of the caudal. No scales along the bases of any of the fins except some at the base of the caudal, which are very fine. The lateral line is not absolutely parallel with the dorsal outline of the back, traversing about 20 scales in the form of single tubes, when it decurves and runs along the sides of the caudal peduncle to the base of the caudal. Each scale is furnished with a small rounded whitish spot. The D. and A., together with the head, are also furnished with similar spots, and on the former there are several longitudinal lines. All the spots of the dorsal region of the body much smaller than those on the sides and the scales being also smaller they appear to form longitudinal bands. The measurements, fin formulæ, scales, etc., as follows:

	No. 9,624.	No. 17,197.	No. 17,198.	No. 17,212.
Total length.....	$5\frac{1}{2}\frac{2}{5}$ in.	$4\frac{7}{15}$ in.	$7\frac{2}{3}$ in.	$8\frac{1}{2}$ in.
Scales .....	29?	29	27	28
Radii of D. ....	IX, 12	IX, 12	IX, 12	IX, 12
Radii of A. ....	III, 12	III, 12	III, 12	III, 12
Radii of P. ....	I, 12	I, 12	I, 12	I, 12
Radii of V. ....	5	5	5	5



**44. *Stethojulis albovittata*** (Lacépède).

*Labrus albovittatus* Lacépède, Hist. Nat. Poiss., III, 1801, pp. 443 and 509.

Nos. 9,415 and 9,418. Dr. J. K. Townsend.

**45. *Stethojulis axillaris*** (Quoy and Gaimard).

*Julis axillaris* Quoy and Gaimard, Voyage de l'Uranie, Zool., 1824, p. 272.

Nos. 9,407 to 9,414. Oahu. Dr. W. H. Jones.

Nos. 9,419 to 9,420. Dr. J. K. Townsend.

**46. *Macropharyngodon geoffroyi*** (Quoy and Gaimard).

*Julis Geoffroy* Quoy and Gaimard, Voyage de l'Uranie, Zool., 1824, p. 270.

No. 17,196. (Dried skin.) Dr. J. K. Townsend.

**47. *Hemipteronotus copei*** sp. nov. Plate XX, fig. I.

No. 521. Type. Oahu. Dr. W. H. Jones.

Form of the body elongated, much compressed, deepest in the pectoral region, from which it diminishes backwards to the caudal. The greatest depth is contained in the total length, without caudal, 3 times. The head is elevated,  $3\frac{5}{8}$  times in the total length, without caudal, much compressed, snout not produced and the anterior profile very parabolic though slightly convex. Lower profile line of the head a very slightly inclined oblique line. The eye is situated in the upper part of the head, nearly median in its length, about once its diameter from the occiput, contained in the greatest depth of the head about  $6\frac{1}{2}$  times, contained in the space between its anterior margin and the tip of the upper jaw 3 times, contained in the total length of the head  $6\frac{1}{4}$  times and it is also equal to the interorbital space. The interorbital space is convex and greatly produced. The nares are small, both very close together, the anterior pair about an eye diameter from the anterior margin of the eye. The præorbital is very long and broad, the infraorbitals narrow and about equal to half an eye diameter. Mouth narrow, the distal extremity of the maxillary below the anterior margin of the eye in the vertical. Teeth strong, the outer lateral teeth larger than the others except the canines which are in two pairs on the anterior portions of the jaws, those in the lower jaw closer together than the upper pair and fitting in between the latter when the mouth is closed. The lips are large and fleshy, those on the sides of the lower jaw forming 2 thin flaps. Mouth

below the upper basal portion of the P. The angle of the præoperculum is a very obtuse one, and would form very little posterior to the posterior margin of the eye. The opercular bones, which shield the branchial aperture, have their lower and posterior margins furnished with membraneous flaps. The gill-membranes are very thick and tough, though they are not connected with the isthmus. Gill-rakers moderate. Pseudobranchiæ developed. The head is naked, except a series of 6 scales, which descend obliquely forwards from the postorbitals, though not extending anterior to the centre of the eye in the vertical. There are also 2 scales, anterior and superior, on the upper margin of the operculum. The origin of the D. is at a point a trifle posterior to the median vertical keel of the præoperculum. The first radii of the D. are developed as 2 pungent spines, the tip of the first ending in a short filament, and about the same height as the spines which succeed them and which are rather strong and firm and not at all pungent. The branched rays of the D. are longer than the spines and the terminal ray, when depressed, reaches the base of the caudal. D. II, VII, 12. Origin of the A. below the first D. ray and the terminal ray is produced like the same of the D., so that when it is depressed it also reaches the base of the caudal. Spines of the A. short, graduated from the first to the third, which is the longest, and the radii of the fin III, 12. Base of the last A. ray slightly posterior to that of the soft D. The P. is contained  $1\frac{3}{4}$  times in the head, radii of the fin I, 11, and their origins are below the centre of the body and above the origin of the V. Innermost ventral ray joined to the body by a membrane and the tips of the fin do not reach the origin of the A. though they extend beyond the tips of the P. The lateral line with 24 single tubes, the greater portion parallel with the dorsal outline of the back from which it is distant a scale's breadth, interrupted after traversing 20 scales, then appearing on the caudal peduncle in a medio-lateral position and continuing to the base of the caudal. There are 26 scales in a lateral series from the operculum to the base of the caudal. Caudal rounded. A narrow bluish band from the lower anterior portion of the eye running downwards to behind the corner of the mouth, parallel with this are other vertical lines running from the eye and the upper part of the head, one on the præoperculum is broad and the opercles are furnished with narrow

lines on their posterior portion. General color dull brownish, the fins immaculate. Total length  $7\frac{1}{2}$  inches.

Named for Prof. E. D. Cope.

**48. *Thalassoma aneitensis*** (Günther).

*Julis aneitensis* Günther, Cat. Fish. Brit. Mus., IV, 1862, p. 183.

Nos. 9,431 to 9,434. Oahu. Dr. W. H. Jones.

**49. *Thalassoma hebraica*** (Lacépède).

*Labrus Hebraicus* Lacépède, Hist. Nat. Poiss., III, 1801, pp. 455 and 526, Pl. 29, fig. 3.

No. 9,426. Dr. J. K. Townsend.

No. 17,201. (Dry skin.) Dr. J. K. Townsend.

**50. *Thalassoma purpurea*** (Forskål).

*Scarus purpureus* Forskål, Descript. Animal., 1775, p. 27.

Nos. 17,199 and 17,202. (Dried skins.) Dr. J. K. Townsend.

No. 17,200 (Dry skin.) Thomas Nuttall.

**51. *Halichoeres* sp.?**

No. 17,195. Dr. J. K. Townsend.

**52. *Gomphosus tricolor*** Quoy and Gaimard.

*Gomphosus tricolor* Quoy and Gaimard, Voyage de l'Uranie, Zool., 1824, p. 280, Pl. 55, fig. 2.

No. 9,406. Dr. J. K. Townsend.

No. 17,213. (Dry skin.) Dr. J. K. Townsend.

**53. *Gomphosus varius*** Lacépède.

*Gomphosus varius* Lacépède, Hist. Nat. Poiss., III, 1801, pp. 100 and 104, Pl. 5, fig. 2.

Nos. 9,404 and 9,405. Dr. J. K. Townsend.

**54. *Coris gaimardi*** (Quoy and Gaimard).

*Julis Gaimard* Quoy and Gaimard, Voyage de l'Uranie, Zool., 1824, p. 265, Pl. 54, fig. 1.

No. 9,330. Dr. J. K. Townsend.

No. 17,203. (Dried skin.) Thomas Nuttall.

**55. *Coris aygula*** Lacépède.

*Coris aygula* Lacépède, Hist. Nat. Poiss., III, 1801, p. 96, Pl. 4, fig. 1.

Nos. 9,331 and 9,332. Dr. J. K. Townsend.

No. 17,207. (Dried skin.) Dr. J. K. Townsend.

The form of the body is elongate, the depth is contained in the total length about  $4\frac{7}{8}$  times and the head in the same  $4\frac{1}{2}$  times. The anterior profile of the head is in the form of an isosceles trian-

gle. The eye is placed anterior and superior in the head, about equal to the præorbital, which is broad and contained in the head about  $4\frac{2}{3}$  times and is also about equal to the interorbital space. The depth of the head is contained  $1\frac{2}{5}$  in its length, and the P. about the same. Nostrils small and anterior to the eye. Four canines in the anterior part of each jaw, the two median lower ones fitting in between the upper pair, both of these median pairs inclined and considerably larger than the others, which are nearly vertical. Remaining teeth diminish in size as they approach the corners of the mouth. Lips rather thick. The head is furnished with pores on the præoperculum and there is also a rather imperfect circumorbital system. The posterior margin of the operculum is produced into a fleshy flap which is a trifle less than the diameter of the eye. The origin of the D. falls a little behind the origins of the P. and V. Radii of D. IX, 12, the spines much shorter than the rays, the first the shortest and the last spine the longest, soft rays equal and the terminal like the same of the A. reach to the base of the caudal. Origin of the A. nearly below the last D. spine, the radii III, 12, the first spine the shortest and the third the longest, but more equal to the soft rays. The V. not so long as the P., radii of the former I, 5, and of the latter I, 11. Scales in the posteriorly decurved lateral line about 50. Scales of the occipital region small. Caudal rounded. Opercular flap with a black posterior marginal spot. Base of the soft D. with brownish spots and the bases of the terminal rays with a distinct blackish ocellus. Total length of the alcoholic specimens about  $5\frac{1}{2}$  inches.

**56. *Coris flavovittata* (Bennett).**

*Julis flavo-vittatus* Bennett, Zoological Journal, IV, 1829, p. 36.

No. 9,333. Dr. J. K. Townsend.

No. 17,208. (Dried skin.) Dr. J. K. Townsend.

**57. *Cheilio inermis* (Forskål).**

*Labrus inermis* Forskål, Descript. Animal., 1775, p. 34.

No. 9,311. Dr. J. K. Townsend.

Nos. 9,312-14. Oahu. Dr. W. H. Jones.

**SCARIDÆ.**

**58. *Scarichthys auritus* (Cuvier and Valenciennes).**

*Scarus auritus* Cuvier and Valenciennes, Hist. Nat. Poiss., XIV, 1839, p. 161.

No. 436. Dr. J. K. Townsend.

**59. *Cryptotomus sandwicensis*** (Cuvier and Valenciennes).

*Callyodon sandwicensis* Cuvier and Valenciennes, Hist. Nat. Poiss. XIV, 1839, p. 219.

Nos. 9,316 and 9,317. Dr. J. K. Townsend.

**60. *Scarus oviceps*** Cuvier and Valenciennes.

*Scarus oviceps* Cuvier and Valenciennes, Hist. Nat. Poiss., XIV, 1839, p. 181.

Nos. 9,277 and 9,278. Dr. J. K. Townsend.

**CHÆTODONTIDÆ.****61. *Forcipiger longirostris*** (Cuvier and Valenciennes).

*Chætodon longirostris* Cuvier and Valenciennes, Hist. Nat. Poiss., VII, 1831, p. 67, Pl. 175.

No. 23,324. (Dry Skin.) Dr. J. K. Townsend.

**62. *Chætodon miliaris*** Quoy and Gaimard.

*Chætodon miliaris* Quoy and Gaimard, Voyage de l'Uranie, Zool., 1824, p. 380, Pl. 62, fig. 6.

Nos. 12,299 and 12,300. Oahu. Dr. W. H. Jones.

No. 17,257. (Dry skin.) Thomas Nuttall.

No. 17,258. (Dry skin.) Dr. J. K. Townsend.

**63. *Chætodon setifer*** Bloch.

*Chætodon setifer* Bloch, Ichthyologie, Vol. 4, pt. 12, 1797, p. 99, Pl. 426, fig. 1.

No. 12,295. Dr. J. K. Townsend.

**64. *Chætodon biocellatus*** Cuvier and Valenciennes.

*Chætodon biocellatus* Cuvier and Valenciennes, Hist. Nat. Poiss., VII, 1831, p. 48.

No. 12,296. Oahu. Dr. W. H. Jones.

No. 17,263. (Dry skin.) Dr. J. K. Townsend.

**65. *Chætodon unimaculatus*** Bloch.

*Chætodon unimaculatus* Bloch, Ichthyologie, Vol. 2, pt. 6, 1788, p. 54, Pl. 201, fig. 1.

No. 17,176. (Dry skin.) Dr. J. K. Townsend.

**66. *Chætodon quadrimaculatus*** Gray.

*Chætodon 4-maculatus* Gray, Zoological Miscellany, 1831-42, p. 33.  
*Chætodon quadrimaculatus* Günther, Cat. Fish. Brit. Mus., II, 1860, p. 12.

Nos. 12,297 and 12,298. Oahu. Dr. W. H. Jones.

No. 17,175. (Dry skin.) Dr. J. K. Townsend.

**67. *Chætodon ornatissimus*** Cuvier and Valenciennes.

*Chætodon ornatissimus* Cuvier and Valenciennes, Hist. Nat. Poiss., VII, 1831, p. 22.

No. 17,259. (Dry skin.) Dr. J. K. Townsend.

**68. *Chætodon tau-nigrum*** Cuvier and Valenciennes.

*Chætodon tau-nigrum* Cuvier and Valenciennes, Hist. Nat. Poiss., VII, 1831, p. 29.

No. 12,292. Dr. J. K. Townsend.

**ZANCLIDÆ.****69. *Zanclus cornutus*** (Linnaeus).

*Chætodon cornutus* Linnaeus, Syst. Nat., Ed. X, 1758, p. 273.

Nos. 11,059 and 11,060. Dr. W. H. Jones.

No. 17,174. (Dry skin.) Dr. J. K. Townsend.

**TEUTHIDIDÆ.****70. *Monoceros unicornis*** (Forskål).

*Chætodon unicornis* Forskål, Descript. Animal., 1775, p. 63.

Nos. 9,768 and 9,769. Oahu. Dr. W. H. Jones.

Nos. 10,337 to 10,339. Dr. J. K. Townsend.

No. 17,285. (Dry skin.) Dr. J. K. Townsend.

No. 17,286. (Dry skin.) Thomas Nuttall.

**71. *Teuthis triostegus*** (Linnaeus).

*Chætodon triostegus* Linnaeus, Syst. Nat., Ed. X, 1758, fig. 270.

Nos. 10,295 and 10,296. Dr. J. K. Townsend.

Nos. 10,297 to 10,313. Oahu. Dr. W. H. Jones.

No. 17,277. (Dry skin.) Thomas Nuttall.

**72. *Teuthis guttatus*** (Bloch and Schneider).

*Acanthurus Guttatus* Bloch and Schneider, Syst. Ichth., 1801, p. 215.

No. 17,279. (Dry skin.) Dr. J. K. Townsend.

**73. *Teuthis annularis*** (Cuvier and Valenciennes).

*Acanthurus annularis* Cuvier and Valenciennes, Hist. Nat. Poiss., X, 1835, p. 153.

Nos. 10,327 to 10,331. Oahu. Dr. W. H. Jones.

Nos. 10,333 to 10,336. Dr. J. K. Townsend.

**74. *Teuthis achilles*** (Shaw).

*Acanthurus Achilles* Shaw, General Zoology, IV, 1803, p. 383.

Nos. 10,319 to 10,321. Dr. J. K. Townsend.

No. 17,280. Dr. J. K. Townsend.

## BALISTIDÆ.

75. *Balistapus bursa* (Bloch and Schneider).

*Balistes Bursa* Bloch and Schneider, Syst. Ichth., 1801, p. 476.

No. 16,473. Dr. W. H. Jones.

76. *Balistapus rectangulus* (Bloch and Schneider).

*Balistes Rectangulus* Bloch and Schneider, Syst. Ichth., 1801, p. 465.

No. 790. Dr. J. K. Townsend.

77. *Canthidermis oculatus* (Gray).

*Balistes oculatus* Gray, Illustrations of Indian Zool., I, 1830-32, Pl. 90, figs. 1 and 1a.

Nos. 802 and 803. Dr. J. K. Townsend.

## MONACANTHIDÆ.

78. *Cantherines sandwichiensis* (Quoy and Gaimard).

*Balistes sandwichiensis* Quoy and Gaimard, Voyage de l'Uranie, Zool., 1824, p. 214.

No. 1,032. Dr. J. K. Townsend.

79. *Monacanthus spilosoma* Lay and Bennet.

*Monacanthus Spilosoma* Lay and Bennett, Zool. Capt. Beechey's Voyage, 1839, p. 70, Pl. XX, fig. 4.

No. 17,309. (Dried skin.) Dr. J. K. Townsend.

## TETRAODONTIDÆ.

80. *Spheroides florealis* (Cope). Plate XX, fig. 4.

*Tetrodon florealis* Cope, Trans. Amer. Philos. Soc., (new ser.) XIV, 1871, p. 479.

Nos. 1,109 and 1,110. Types of *Tetrodon florealis* Cope. Dr. J. K. Townsend.

No. 17,336. (Dried skin.) Dr. J. K. Townsend.

## MOLIDÆ.

81. *Ranzania makua* Jenkins.

*Ranzania makua* Jenkins, Proc. Cal. Acad. Sci., (2) V, 1895, Colored frontispiece, p. 779.

No. 17,369. (Fine dried skin.) Dr. J. K. Townsend.

It is interesting to observe that this specimen was taken nearly sixty years before the one described by Dr. Jenkins, and even yet it shows well-preserved traces of its once brilliant colors. The markings of the head are especially distinct, and are in the form of somewhat irregular crescents, with the convex side bending anteriorly. Three of these markings radiate from the inferior

margin of the eye, though there is 1 anterior to these and more horizontal, and they all become more vertical posteriorly. There are also 2 broad vertical bars between the eye and the P. On the sides of the head below and somewhat posterior to the eyes and anterior to the base of the P. are a number of blackish spots which are distributed over the bands. P. 13; D. 19; A. 20; Caudal 22. Total length of the body without the caudal  $18\frac{5}{8}$  inches.

#### SCORPÆNIDÆ.

**82. *Sebastopsis guamensis*** (Quoy and Gaimard).

*Scorpæna guamensis* Quoy and Gaimard, Voyage de l'Uranie, Zool., 1824, p. 326.

No. 12,207. Dr. J. K. Townsend.

**83. *Sebastopistes strongia*** (Cuvier and Valenciennes).

*Scorpæna strongia* Cuvier and Valenciennes, Hist. Nat. Poiss., IV, 1829, p. 237.

No. 12,206. Dr. J. K. Townsend.

This poorly preserved specimen has the following fin formula:  
D. XII, 10; A. III, 5; P. 16; V. I, 5.

**84. *Scorpænenopsis diabolus*** (Cuvier and Valenciennes).

*Scorpæna diabolus* Cuvier and Valenciennes, Hist. Nat. Poiss., IV, 1829, p. 229.

No. 17,165. (Dried skin.) Dr. J. K. Townsend.

#### CARACANTHIDÆ.

**85. *Caracanthus maculatus*** (Gray). Plate XX, fig. 5.

*Micropus maculatus* Gray, Zoological Miscellany, 1831-42, p. 20.

No. 23,048. Honolulu. Dr. Benjamin Sharp.

Head and body greatly compressed, the greatest depth of the latter about  $1\frac{1}{2}$  in its length without the caudal. Upper profile of the head somewhat parabolic. Eye over once in the snout, greater than the interorbital space and about  $3\frac{1}{2}$  in the head without the opercular flap. Head  $2\frac{1}{2}$  in the body without the caudal. Nares well developed, the posterior pair the largest. Mouth rather broad, horizontal, when closed the jaws are equal and also furnished with small teeth. Lips moderately developed. The maxillary, which is very oblique, extends posteriorly for  $\frac{2}{3}$  of the diameter of the eye. The preorbital is armed with a broad sharp spine projecting obliquely downwards parallel with the maxillary. The inter-



operculum is armed with a spine and the præoperculum has 5 curved spines along its posterior margin, the lower the largest. On the upper posterior part of the operculum are 2 broad flattened spines. The top of the head and the interorbital space is villously osseous and over the eyes are 2 larger ossifications. The branchial aperture is moderate, lateral in position, and the gill-membranes are joined to the isthmus which is large and fleshy. Gill-rakers moderate, most numerous posteriorly. Pseudobranchiæ well developed. No slit after the last gill-arch. Origin of the D. over the tips of the opercular spines, a little before that of the P., and the fin is divided, the spinous portion with VIII spines and the soft portion with 12 rays the last of which is adnate, along its posterior margin to the caudal peduncle by a membrane. The third D. spine is the longest and the second is longer than the seventh and eighth, while the soft rays are more even, those anteriorly the longest, and the rays gradually become shorter posteriorly. P. with VIII simple and 5 branched rays. V. more or less rudimentary radii I, 3. A. spines II, isolated from the soft rays of the fin which are 12, and the last is adnate to the caudal peduncle by a membrane. The 2 spines of the A. are a little posterior to the origin of the soft D. The lateral line is conspicuous and runs from above the branchial aperture to the base of the caudal. Body naked, papillose. Caudal small and rounded. Color in alcohol brownish, much darker above and with numerous small round whitish spots. Total length  $1\frac{1}{2}$  inches.

#### CEPHALACANTHIDÆ.

**86. *Cephalacanthus orientalis*** (Cuvier and Valenciennes).

*Dactylopterus orientalis* Cuvier and Valenciennes, Hist. Nat. Poiss., IV, 1829, p. 98, Pl. 76.

No. 11,643. Dr. J. K. Townsend.

No. 17,067. (Dried skin.) Dr. J. K. Townsend.

Nos. 23,351 and 23,352. Dr. W. H. Jones.

#### GOBIIDÆ.

**87. *Eleotris fuscus*** (Bloch and Schneider).

*Pæcilia Fusca* Bloch and Schneider, Syst. Ichth., 1801, p. 453.

Nos. 22,924 to 22,943. Honolulu. Dr. Benjamin Sharp.

**88. *Gobius albopunctatus*** Cuvier and Valenciennes.

*Gobius albopunctatus* Cuvier and Valenciennes, Hist. Nat. Poiss., XII, 1837, p. 43.

No. 10,703. Dr. J. K. Townsend.

**89. *Gobius papuensis*** Cuvier and Valenciennes.

*Gobius Papuensis* Cuvier and Valenciennes, Hist. Nat. Poiss., XII, 1837, p. 80.

No. 23,350. Dr. Benjamin Sharp.

**90. *Gobius* sp.?**

Nos. 23,345 to 23,348. Dr. J. K. Townsend.

More than one species may be included here, but the specimens are so poorly preserved that I have not attempted to identify them.

**91. *Awaous genivittatus*** (Cuvier and Valenciennes).

*Gobius genivittatus* Cuvier and Valenciennes, Hist. Nat. Poiss., XII, 1837, p. 48.

No. 10,746 and 10,747. Dr. J. K. Townsend.

**92. *Awaous crassilabris*** (Günther).

*Gobius crassilabris* Günther, Cat. Fish. Brit. Mus., III, 1861, p. 63.

Nos. 10,744 and 10,745. Dr. J. K. Townsend.

**ECHENEIDIDÆ.****93. *Remora albescent*** (Temminck and Schlegel).

*Echeneis albescent* Temminck and Schlegel, Fauna Japonica, Poiss., 1842, p. 272, Pl. 120, fig. 3.

No. 11,413. Thomas Nuttall.

**BLENNIDÆ.****94. *Petroskirtes filamentosus*** (Cuvier and Valenciennes).

*Blennichis filamentosus* Cuvier and Valenciennes, Hist. Nat. Poiss., XI, 1836, p. 206, Pls. 325, 326, lower fig.

No. 16,666. Dr. W. H. Jones.

**95. *Salarias edentulus*** (Bloch and Schneider).

*Blennius Edentulus* Bloch and Schneider, Syst. Ichth., 1801, p. 172.

No. 10,489. Dr. W. H. Jones.

**96. *Salarias gibbifrons*** Quoy and Gaimard.

*Salarias gibbifrons* Quoy and Gaimard, Voyage de l'Uranie, Zool., 1824, p. 253.

No. 10,492. Dr. J. K. Townsend.

In this specimen the A. is marked with a number of spots.

**97. *Salarias variolosus*** Cuvier and Valenciennes.

*Salarias variolosus* Cuvier and Valenciennes, Hist. Nat. Poiss., XI, 1836, p. 235.

No. 10,493. Dr. W. H. Jones.

? No. 10,494. Thomas Nuttall.

Nuttall's specimen is very badly preserved.

**98. *Salarias brevis*** Kner.

*Salarias brevis* Kner, Sitzungb. Akad. Wissensch. Wien., LVIII, 1868, p. 334, taf. 6, fig. 18.

No. 10,495. Dr. J. K. Townsend.

**BROTULIDÆ.****99. *Brotula townsendi*** sp. nov. Plate XX, fig. 3.

No. 8,981. Type. Dr. J. K. Townsend.

Form of the body elongate, the greatest depth a trifle over 5 in the total length. The head is compressed, and including the opercular flap is contained in the total length about 5 times. The eyes are anterior and high in the head, small, contained in the head with opercular flap nearly 8 times, in the interorbital space  $1\frac{1}{2}$  times and nearly 2 in the snout. Mouth rather large and prominent and with the lower jaw projecting. Lips large, thick and fleshy, there are 4 superior buccal barbels of about equal length and 6 inferior mandibular ones which are longer than the former. The anterior nares which are near the posterior pair are furnished with a pair of barbels which are also larger than the rest of the upper ones. The anterior nares are about an eye diameter from the eyes, and their aperture is smaller than that of the posterior pair. Teeth of the jaws, vomer and palatines, small and in many series forming broad and well-defined patches. The maxillary is oblique, very broad at the distal extremity, reaching beyond the posterior margin of the eye, and its width at that point is equal to the length of the snout. The supplemental maxillary is well developed thus accounting for its broad distal extremity. The maxillaries themselves are more or less partly concealed by the orbital flap of skin. The branchial aperture is large, the gill-membranes joined to each other and crossing the isthmus but not joined to it. No pseudobranchiæ. Gill-rakers as long as the eye and a slit after the last gill-arch. On the superior and anterior part of the operculum is a partly erectile spine directed backwards, which is about as long as the eye. The V., which are bifid, are jugular in position, and

their origin is not quite an eye diameter posterior to the distal extremity of the maxillary, and their tips extend posteriorly as far as the tips of the P., which is about half-way between the base of the P. and the anus. The origin of the P. is anterior to that of the D., and the fin is contained nearly twice in the head. The D., A. and caudal are continuous, the latter terminating in a point. D. A. and caudal 176? Body covered with small cycloid scales, about 96 in the lateral line. The lateral line is dorsal in position and nearly parallel with the dorsal outline of the body throughout its whole course. General color uniform brownish. Total length 5 inches.

Named for Dr. J. K. Townsend.

#### ANTENNARIDÆ.

100. *Antennarius commersonii* (Lacépède).

*Lophius commersonii* Lacépède, Hist. Nat. Poiss., I, 1801, p. 327.

Nos. 10,648 and 10,649. Thomas Nuttall and Dr. J. K. Townsend.

101. *Antennarius* sp.?

No. 10,647. Dr. J. K. Townsend.

Specimen badly preserved.

#### II. TAHITI.

The collections illustrating the ichthyology of this region, in the Academy, are those made by Dr. J. K. Townsend and Mr. Andrew Garrett. Dr. Townsend's collection was made while on his second Pacific expedition, and after the visit to the Sandwich Islands.

#### CLUPEIDÆ.

1. *Sardinella atricauda* (Günther).

*Clupea atricauda* Günther, Cat. Fish. Brit. Mus., VII, 1868, p. 426.

Nos. 14,504 to 14,506. Andrew Garrett.

#### SYNGNATHIDÆ.

2. *Doryrhamphus brachyurus* (Bleeker).

*Syngnathus brachyurus* Bleeker, Verhandel. Batavia. Genootsch. Kunst. Wetensch., Deel XXV, 1853, p. 16.

Nos. 14,848 to 14,868. Andrew Garrett.

Dumeril has placed *Dorichthys mille-punctatus* of Kaup in the synonymy of this species (*Hist. Nat. Poiss.*, 1870, p. 575).

### SPHYRÆNIDÆ.

3. *Sphyræna commersonii* Cuvier and Valenciennes.

*Sphyræna Commersonii* Cuvier and Valenciennes, *Hist. Nat. Poiss.*, III, 1829, p. 260.

No. 11,466. Dr. J. K. Townsend.

### HOLOCENTRIDÆ.

4. *Holocentrus diploxiphus* Günther.

*Holocentrum diploxiphus* Günther, *Proc. Zool. Soc. London*, 1871, p. 660.

No. 14,140. Dr. J. K. Townsend.

### MULLIDÆ.

5. *Upeneoides vittatus* (Forskål).

*Mullus vittatus* Forskål, *Descript. Animal.*, 1775, p. 31.

Nos. 12,473 and 12,476. Dr. J. K. Townsend.

6. *Upeneus trifasciatus* (Lacépède).

*Mullus trifasciatus* Lacépède, *Hist. Nat. Poiss.*, III, 1801, pp. 383 and 404, Pl. 15, fig. 1.

No. 12,475. Dr. J. K. Townsend.

7. *Upeneus pleurospilos* Bleeker.

*Upeneus pleurospilos* Bleeker, *Natuurk. Tijdsch. voor Nederl. Indie*, Deel IV, (New Series I) 1853, p. 110.

No. 12,474. Dr. J. K. Townsend.

### KUHLIDÆ.

8. *Kuhlia marginata* (Cuvier and Valenciennes).

*Dules marginatus* Cuvier and Valenciennes, *Hist. Nat. Poiss.*, III, 1829, p. 87, Pl. 52.

Nos. 16,008 to 16,010. Andrew Garrett.

9. *Kuhlia malo* (Cuvier and Valenciennes).

*Dules malo* Cuvier and Valenciennes, *Hist. Nat. Poiss.*, VII, 1831, p. 360.

No. 12,647. Dr. J. K. Townsend.

### POMACENTRIDÆ.

10. *Tetradrachmum aruanus* (Linnaeus).

*Chætodon aruanus* Linnaeus, *Syst. Nat.*, Ed. X, 1758. p. 275.

Nos. 9,620 and 9,621. Andrew Garrett.

## LABRIDÆ.

11. *Pseudocheilinus hexatænia* (Bleeker).

*Cheilinus hexatænia* Bleeker, Acta. Societ. Scient. Indo Neerlandicæ,  
Vol. II, 1857, p. 84.

Nos. 9,667 to 9,673. Andrew Garrett.

## SCORPÆNIDÆ.

12. *Sebastopsis guamensis* (Quoy and Gaimard).

*Scorpena guamensis* Quoy and Gaimard, Voyage de l'Uranie, Zool.,  
1824, p. 326.

Nos. 12,192 to 12,198. Andrew Garrett.

Body moderately elongate, robust, greatest depth in the region of the P. and about 3 in the total length, excluding caudal. Head  $2\frac{1}{2}$  in the body without the caudal, broad, somewhat conical, and furnished with sharp spines, as the preocular, supraocular, postocular, tympanic, parietal, nuchal, preopercular and opercular, all of which are present and many are furnished with small filaments. Top of the head without occipital depression and the interorbital space concave, not equal to the diameter of the eye. Eye large, about  $3\frac{1}{2}$  in the head and nearly once in the snout. Snout very protractile and with a depression between the premaxillaries into which the slightly knobbed symphysis of the mandible fits when the mouth is closed. Maxillaries broad distally and extending posteriorly for nearly  $\frac{2}{3}$  the eye diameter. Villiform teeth on the premaxillaries, dentaries and vomer, but none on the palatines. Gill-rakers small, short and moderate in number. No slit after the last gill-arch. Pseudobranchiæ well developed. The gill-membranes are not broadly connected across the isthmus. Branchiostegal radii strong, becoming larger, longer and more robust as they ascend the ceratohyals which are rather broad. The jaws are equal. Opercular flap scaly below like the rest of the operculum and præoperculum, also the region below the eyes and on the top of the head. The branchial aperture is very large and with a distinct depression. There is a small spine above the P. near the opercular flap. Origin of the D. about over that of the P., and both before the posterior edge of the opercular flap. Base of the D. very long, the base of the terminal ray more posterior than that of the terminal A. ray, and with its posterior margin joined to the caudal peduncle by a membrane. The rays of the soft D. exceed the length of the longest D. spine. The P.

has an exceedingly broad base, inclining somewhat anteriorly, radii of the fin very long, much longer than the V., whose origin is posterior to that of the P., and its tips reach beyond the anus and nearly to the origin of the A. The inner V. ray is joined to the body by a membrane at its base and the tips of the fins do not reach the anus. The origin of the A. falls below that of the soft D., the first spine is the shortest and the second the longest, though not equal to the longest soft rays. The caudal is small and rounded, and the median rays somewhat the longest. Color in alcohol mostly of a rich brown, beautifully variegated with darker marblings and spots. A broad light band across the soft D., caudal peduncle and soft A. All the fins irregularly and somewhat narrowly barred with darker brownish. A large blackish spot about the size of the eye upon the upper part of the operculum. Scales mostly ctenoid, except those of the thoracic region, which are cycloid, and together with the ctenoid scales of the head, those along the bases of the D., A. and P. much smaller than those on the rest of the body. The lateral line descends from above the gill-opening to the centre of the base of the caudal in nearly a straight line, not traversing the caudal peduncle medio-laterally. There are about 38 to 42 scales in the lateral line. Radii of the D. mostly XIII, 9, only seldom XIV, 9 or XIII, 10. Radii of P. mostly 19, occasionally 18. Radii of V. I, 5. Radii of A. III, 5. The entire length of the specimens ranges from  $1\frac{13}{16}$  to  $3\frac{5}{8}$  inches.

**13. *Pterois radiata* Cuvier and Valenciennes.**

*Pterois radiata* Cuvier and Valenciennes, Hist. Nat. Poiss., IV, 1829, p. 271.

No. 11,807. Andrew Garrett.

**CARACANTHIDÆ.**

**14. *Caracanthus maculatus* (Gray).**

*Micropus maculatus* Gray, Zoological Miscellany, 1831-42, p. 20.

No. 12,199. Andrew Garrett.

This specimen is very much like the one obtained by Dr. Sharp at Honolulu, but differs a little in the larger eye, and the coloration is also different, but this is due, I think, to the method of preservation as Dr. Sharp's specimen was discolored by being placed in a copper can.

## GOBIIDÆ.

15. *Eleotris fuscus* (Bloch and Schneider).

*Pacilia Fusca* Bloch and Schneider, Syst. Ichth., 1801, p. 453.

Nos. 11,006 to 11,025. Andrew Garrett.

16. *Gobius ornatus* Rüppell.

*Gobius ornatus* Rüppell, Atlas zu der Reise im Nördl. Afrika, 1828, p. 135.

No. 10,668. Andrew Garrett.

## PSEUDOCROMIDÆ.

17. *Pseudochromis polyacanthus* Bleeker.

*Pseudochromis polyacanthus* Bleeker, Natuurk. Tijdsch. voor Nederl. Indie, Deel X (New Series) 1856, p. 375.

No. 14,647. Andrew Garrett.

## FIERASFERIDÆ.

18. *Fierasfer homei* (Richardson).

*Oxybeles homei* Richardson, Voyage of the Erebus and Terror, Ichth., 1844-48, p. 74, Pl. 44, figs. 7 to 18.

Nos. 8,933 to 8,937. Andrew Garrett.

19. *Fierasfer parvipinnis* Kaup. Plate XIX, fig. 5.

*Fierasfer parvipinnis* Kaup, Cat. of Apod. Fish., 1856, p. 160, Pl. 16, fig. 2.

No. 8,938. Andrew Garrett.

A fine specimen with the very elongate tapering body peculiar to the genus, in which the greatest depth, which is a little posterior to the P., is contained  $11\frac{1}{2}$  times. The head is contained in the body 9 times, its greatest depth contained in its own length  $1\frac{3}{5}$  times, though its breadth is a trifle greater than its greatest depth. The eyes are circular, anterior and superior, greater than the snout and contained in the length of the head about 6 times. Top of the head broad, nearly flat, or only very slightly convex, the cheeks swollen, and the interorbital space equal to  $1\frac{1}{2}$  eye diameters. The snout is obtuse, blunt and with the jaws equal when closed. Teeth in the jaws pluriserial, well developed. Vomerine and palatine teeth larger and more conical than those of the jaws, especially the former. Maxillaries oblique, the distal extremity expanded and posterior to the posterior margin of the eye. Branchial aperture large, the gill-membranes free from the isthmus, but forming a fold which passes over it. Branchiostegals robust. Pseudo-branchiæ absent. Gill-rakers in moderate number and nearly as



long as the eye. Nares small. The operculum is prolonged posteriorly into a little flap. Genito-anal apertures anterior to the origin of the very short P., which is contained in the length of the head 4 times. Both the D. and A. are very little developed, so that I am unable to locate the origin of the former, but that of the latter falls a short distance behind the base of the P. The body is completely naked and the lateral line is distinct and straight from above the branchial aperture to the tip of the caudal. The color in alcohol is at present a rich light brown with very minute dark spots or dots, and there also appears to have been marblings of another darker color than the ground color, but not so dark as the dots. The cheeks are also somewhat darker than the ground color. Total length 7 inches.

### III. SAMOA.

The following specimens were collected many years ago by Dr. H. C. Caldwell, by whom they were presented to the Academy.

#### ANGUILLIDÆ.

1. *Anguilla bengalensis* (Gray).

*Muræna Bengalensis* Gray, Illustrations of Indian Zoology, I, 1832, Pl. 95, fig. 5 (after Ham. Buch. MS.).

No. 1.087.

This specimen is labeled as the type of *Anguilla planirostris* Abbott MS.

#### MURÆNIDÆ.

2. *Echidna nebulosa* (Ahl).

*Muræna nebulosa* Ahl, De Muræna et Ophichtho, 1789, p. 5, Pl. 1, fig. 2.

No. 966.

#### MUGILIDÆ.

3. *Mugil caldwelli* sp. nov. Plate XIX, fig. 4.

No. 9,841. Type.

Form of the body oblong, the greatest depth  $4\frac{2}{3}$  in the total length, head about the same, but much longer than deep. The eye is situated in the anterior part of the head and above the centre of its depth, contained once in the snout,  $3\frac{2}{3}$  in the head, and  $1\frac{3}{5}$  times in the interorbital space which is evenly though shallowly convex and also contained in the head  $2\frac{1}{4}$  times. The

eye is furnished with an adipose eyelid the posterior portion of which is broader than the anterior portion and also covers the greater part of the iris. The nostrils are placed superiorly, both pairs closer together than the width of the interorbital space, and when viewed laterally the anterior is half an eye diameter anterior and superior to the centre of the eye and is rounded. The posterior nostrils are slit-like, superior to the anterior and nearer the front margin of the eye than the centre of the space between the anterior pair and the anterior margin of the eye. Mouth very protractile, lips moderately thin and the symphysis of the mandible is elevated and fits into a depression in the centre of the roof of the upper jaw when the mouth is closed. The depth of the mouth, that is the space between the symphysis of the mandible and the corner of the mouth, is more than  $\frac{1}{2}$  the width of the breadth between both corners of the same. The angle made by the mandibular bones would be an obtuse one. The maxillaries are completely hidden when the mouth is closed. The corners of the mouth are a trifle posterior to the posterior nostrils. The præorbital is small, scaleless and with the lower margin denticulate. Head covered with scales, except the jaws, and the opercles at present are also nude, but they were most likely scaled during life. Gill-rakers long and well developed. Pseudobranchiæ well developed. Origin of the P. above the centre of the body, though the base of the fin is not as high as the upper margin of the eye, directly behind the branchial aperture, shorter than the head and extending posteriorly a trifle beyond the origin of the spinous D. Radii of P. I, 15. The origin of the V. is about half-way between the origin of the P. and its tip, and it reaches posteriorly beyond the centre of the space between their bases and the anus. The anus is directly below the tip of the second D. spine, when the fin is depressed. Radii of V. I, 5, the innermost rays joined to each other and to the body by a membrane at their bases and there is also a large arrow-shaped scale between their bases. The P. are also furnished with a scale at their bases. The soft D. differs from that of any other species of *Mugil* known to me by having 5 rays, and they all appear to be branched rays, as there is no anterior spine present in this fin. The origin of the soft D. is over the fourth or fifth soft A. ray. The spinous D with IV spines, the first 3 large and well developed, the third thin and

shorter than the second and fourth is about  $\frac{2}{3}$  the length of the second, which is the longest. There are 2 elongated scales at the base of the spinous D., which lie on the back. Origin of the A. posterior to the anus, radii III, 9, the anterior rays the longest and the terminal longer than the median. The A. is covered with small scales, especially anteriorly, the scales extending on the fins as far as the tip of the third spine, which is the longest, the first being the shortest. The soft D. appears to have had the basal portion covered with scales. Caudal very deeply emarginate, the lobes pointed and the basal portion scaled. Caudal peduncle compressed and equal to the interorbital space. As the scales on the anterior part of the body have been removed, I shall count the scales from the upper posterior margin of the operculum to the base of the caudal, yet they are in places removed so that the count is approximate—34. The color is a dull silvery, without any conspicuous markings. Total length  $5\frac{1}{2}$  inches.

I have named this species for Dr. Caldwell, who collected the type.

#### HOLOCENTRIDÆ.

4. *Holocentrus diadema* Lacépède.

*Holocentrus diadema* Lacépède, Hist. Nat. Poiss., III, 1801, Pl. 32, fig. 4, IV, 1801, pp. 372 and 374.

Nos. 14,139 and 14,140.

5. *Holocentrus spinifer* (Forskål).

*Sciæna spinifera* Forskål, Descript. Animal., 1775, p. 49.

No. 14,142.

6. *Holocentrus sammara* (Forskål).

*Sciæna sammara* Forskål, Descript. Animal., 1775, p. 48.

No. 14,141.

#### MULLIDÆ.

7. *Upeneus indicus* (Shaw).

*Mullus Indicus* Shaw, General Zoölogy, IV, 1803, p. 614.

Nos. 12,471 and 12,472.

#### EQUULIDÆ.

8. *Equula fasciata* (Lacépède).

*Clupea fasciata* Lacépède, Hist. Nat. Poiss., V, 1802, pp. 425, 460 and 463.

No. 11,064.

## KUHLIDÆ.

9. *Kuhlia rupestris* (Lacépède).

*Centropomus rupestris* Lacépède, Hist. Nat. Poiss., IV, 1801, pp. 252 and 273.

No. 12,648.

## SERRANIDÆ.

10. *Epinephelus merra* Bloch.

*Epinephelus merra* Bloch, Ausl. Fische, VII, 1793, p. 17, fig. 329.

No. 13,456.

## LUTIANIDÆ.

11. *Genyoroge marginata* (Cuvier and Valenciennes).

*Diacope marginata* Cuvier and Valenciennes, Hist. Nat. Poiss., II, 1828, p. 320.

No. 13,288.

## POMACENTRIDÆ.

12. *Eupomacentrus lividus* (Bloch and Schneider).

*Chætodon Lividus* Bloch and Schneider, Syst. Ichth., 1801, p. 235.

No. 9,651 and (?) 9,652.

Of the latter, which is in bad preservation, I am not positive of the identification.

## LABRIDÆ.

13. *Hemigymnus melapterus* (Bloch).

*Labrus melapterus* Bloch, Ichthyologie, Vol. 3, pt. 8, 1797, p. 111, Pl. 285.

Nos. 9,591 and 9,653.

## SCARIDÆ.

14. *Scarus viridus* Bloch.

*Scarus viridus* Bloch, Ichthyologie, Vol. 3, pt. 7, 1797, p. 20. Pl. 222.

No. 9,274.

15. *Scarus globiceps* Cuvier and Valenciennes.

*Scarus globiceps* Cuvier and Valenciennes, Hist. Nat. Poiss., XIV, 1839, p. 179.

Nos. 9,279 and 9,280.

16. *Scarus* sp.?

No. 9,275.

## CHÆTODONTIDÆ.

17. *Chætodon setifer* Bloch.

*Chætodon setifer* Bloch, Ichthyologie, Vol. 4, pt. 12, 1797, p. 99, Pl. 426, fig. 1.

No. 12,294.

18. *Chætodon vagabundus* Linnæus.

*Chætodon vagabundus* Linnæus, Syst. Nat., Ed. X, 1758, p. 276.

No. 12,293.

## BALISTIDÆ.

19. *Balistapus aculeatus* (Linnæus).

*Balistes aculeatus* Linnæus, Syst. Nat., Ed. X, 1758, p. 328.

Nos. 801 and 23,349.

These two specimens represent the *Balistes diva* Cope MS., but are undoubtedly the young of the above.

## TETRAODONTIDÆ.

20. *Ovoides immaculatus* (Bloch and Schneider).

*Tetrodon Immaculatus* Bloch and Schneider, Syst. Ichth., 1801, p. 507 (after Lacépède).

No. 1,117.

The writer would like to call attention to errors in the *Proc. Acad. Nat. Sci. Phila.*, 1899, p. 496, where *Arothron* is spelled *Arathron* and *Arothron reticularis* (Bloch and Schneider) is referred to as *Arathron reticulatis* (Günther). The species should all be referred to the present genus, *Ovoides*, then they would stand:

*Ovoides nigropunctatus* (Bloch and Schneider).

*Tetrodon Nigropunctatus* Bloch and Schneider, Syst. Ichth., 1801, p. 507.

*Ovoides reticularis* (Bloch and Schneider).

*Tetrodon Reticularis* Bloch and Schneider, Syst. Ichth., 1801, p. 506.

21. *Ovoides ophryas* (Cope). Pl. XX, fig. 2.

*Arothron ophryas* Cope, Trans. Amer. Philos. Soc., (New Series) XIV, 1871, p. 479.

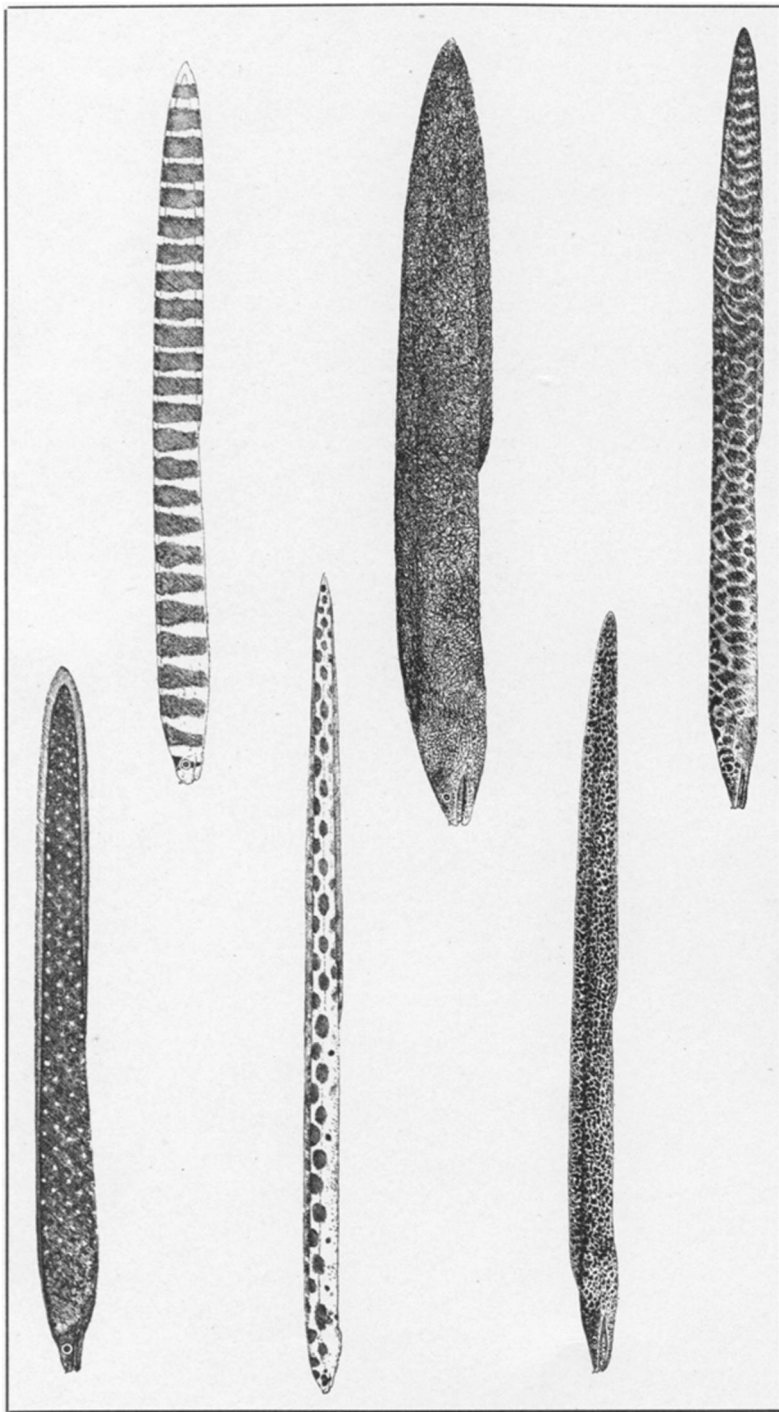
No. 651. Type of *Arothron ophryas* Cope.

## ECHENEIDIDÆ.

22. *Echeneis naucrates* Linnæus.

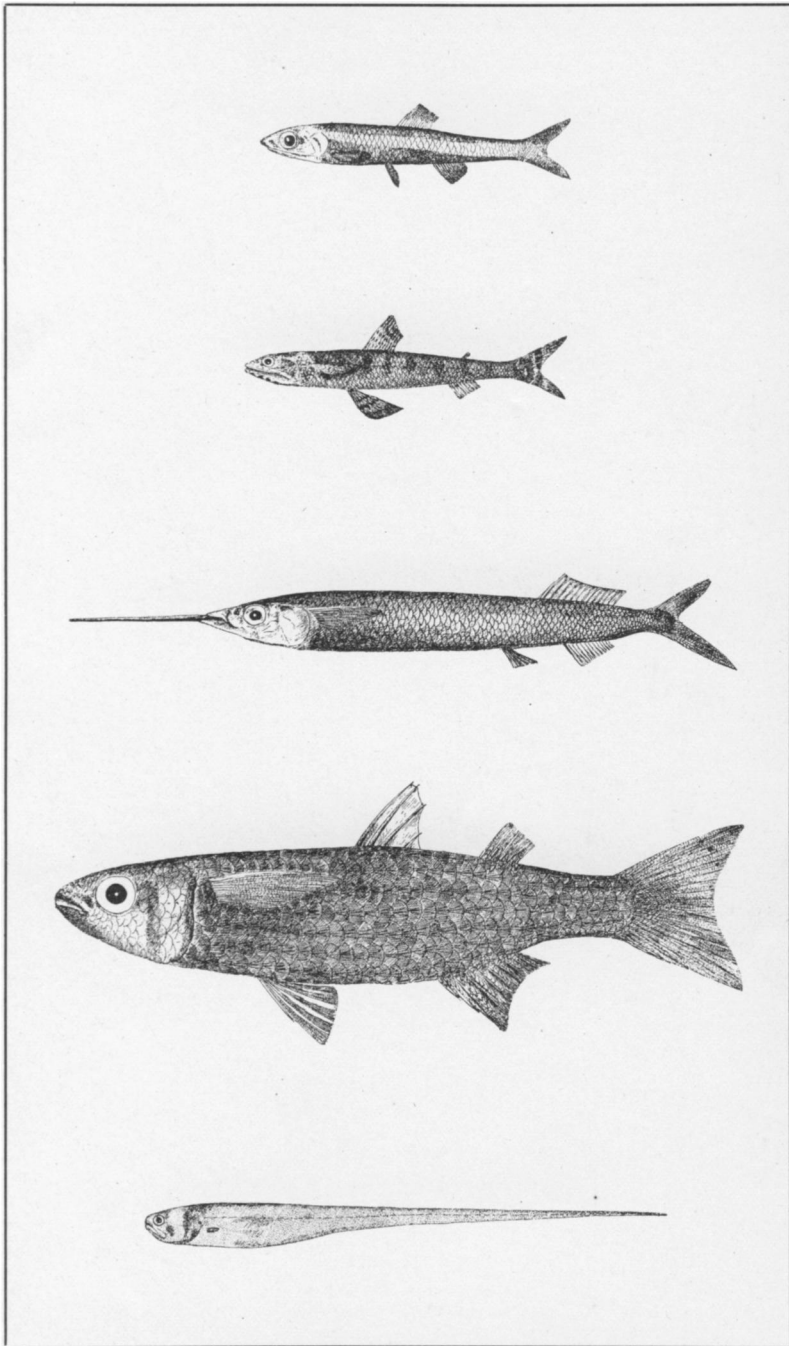
*Echeneis naucrates* Linnæus, Syst. Nat., Ed. X, 1758, p. 261.

No. 11,423.



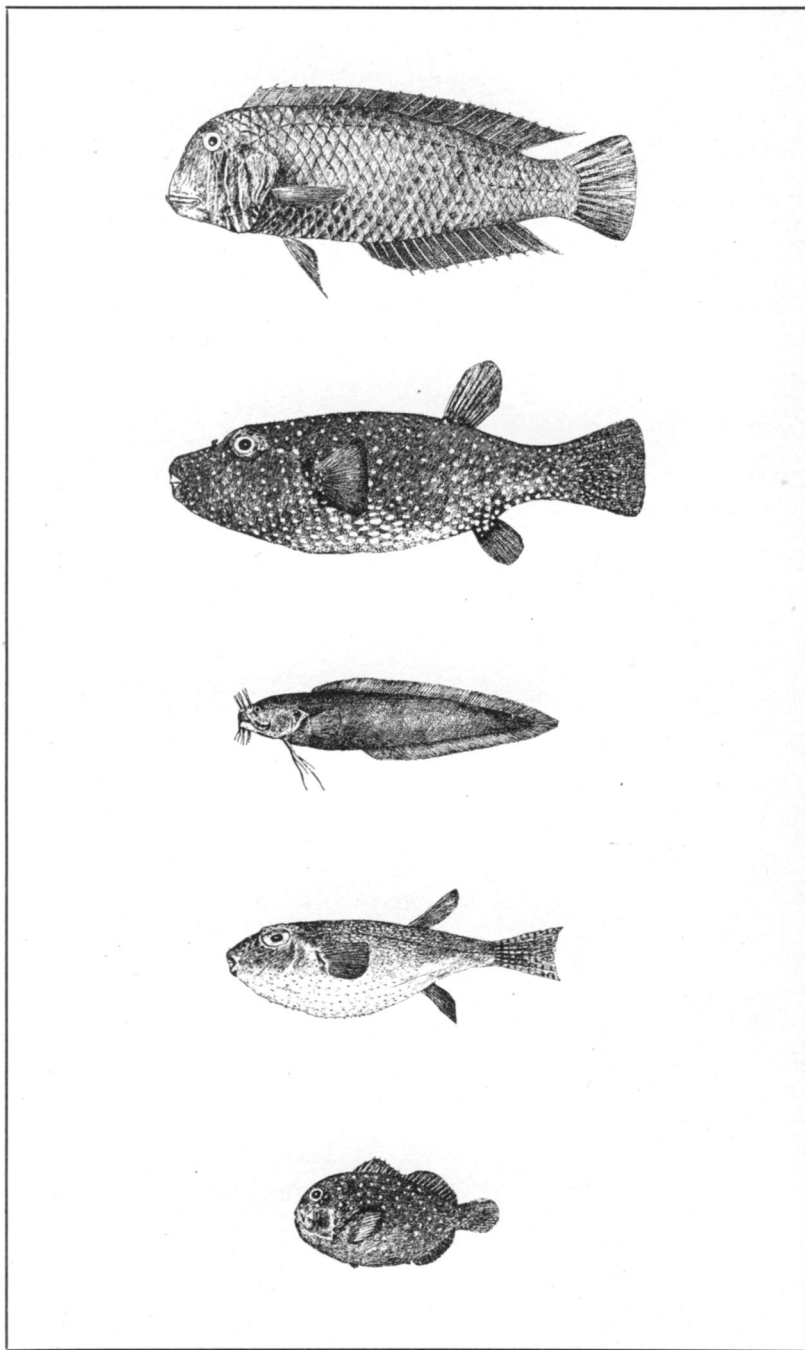
FOWLER. ICHTHYOLOGY OF THE TROPICAL PACIFIC.

- |                               |           |
|-------------------------------|-----------|
| 1. LYCODONTIS PARVIBRACHIALIS | FOWLER.   |
| 2. ECHIDNA ZONATA             | FOWLER.   |
| 3. MYRICHTHYS MAGNIFICUS      | (ABBOTT). |
| 4. LYCODONTIS EUROSTA         | (ABBOTT). |
| 5. LYCODONTIS ACUTIROSTRIS    | (ABBOTT). |
| 6. LYCODONTIS KAUP            | (ABBOTT). |



FOWLER. ICHTHYOLOGY OF THE TROPICAL PACIFIC.

1. *STOLEPHORUS PURPUREUS* FOWLER.
2. *SYNODUS SHARPI* FOWLER.
3. *HEMIRAMPHUS DEPAUPERATUS* LAY AND BENNETT.
4. *MUGIL CALDWELLI* FOWLER.
5. *FIERASFER PARVIPINNIS* (KAUP).



FOWLER. ICHTHYOLOGY OF THE TROPICAL PACIFIC.

1. HEMIPTERONOTUS COPEI FOWLER.
2. OVOIDES OPHYRUS (COPE).
3. BROTULA TOWNSENDI FOWLER.
4. SPHEROIDES FLOREALIS (COPE).
5. CARACANTHUS MACULATUS (GRAY).